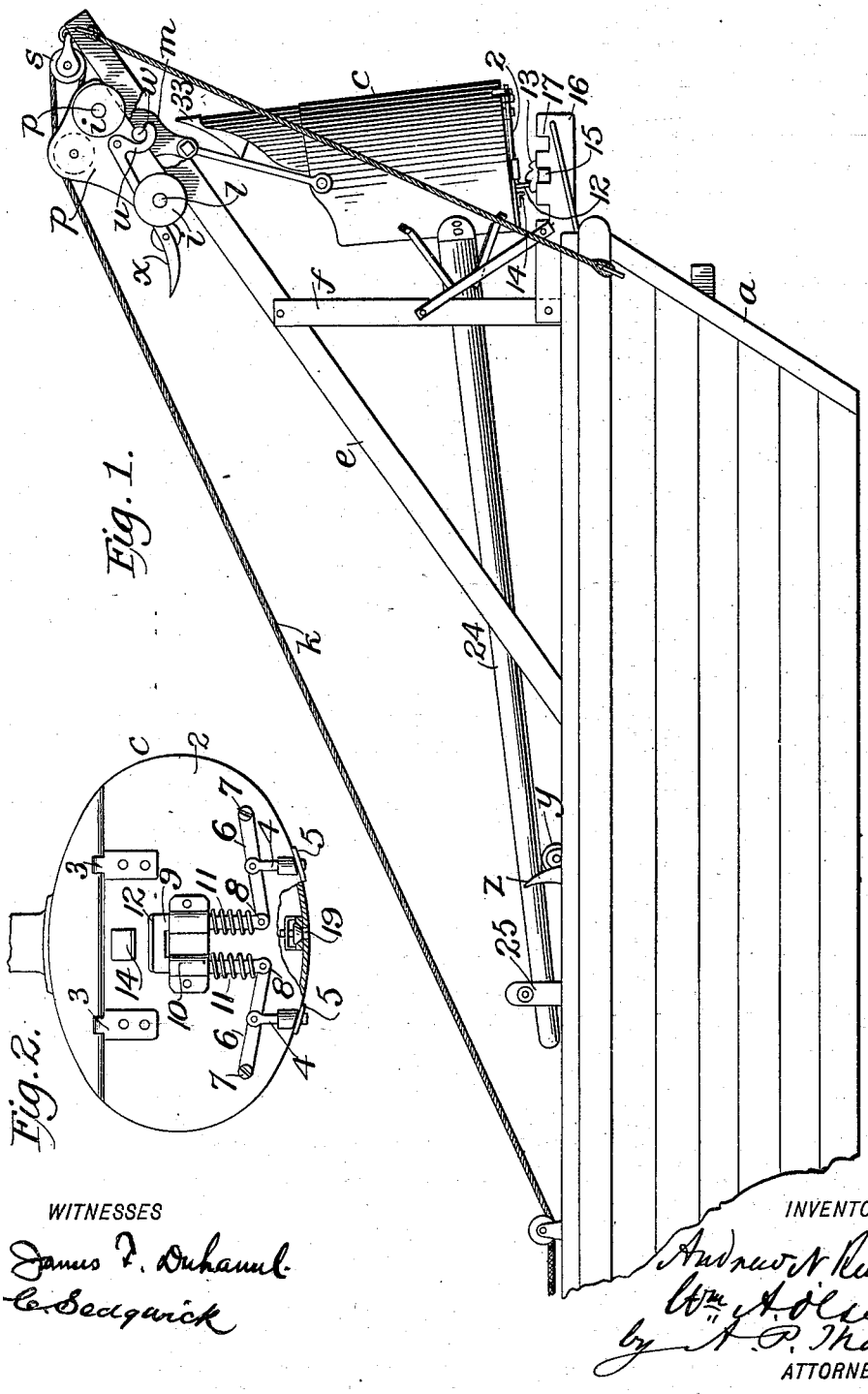
No. 650,157. Patented May 22, 1900.

A. N. REIMER & W. A. OLSEN.

DREDGING MACHINE.

(Application filed Dec. 23, 1899.)

(No Model.) 2 Sheets—Sheet 1.



WITNESSES

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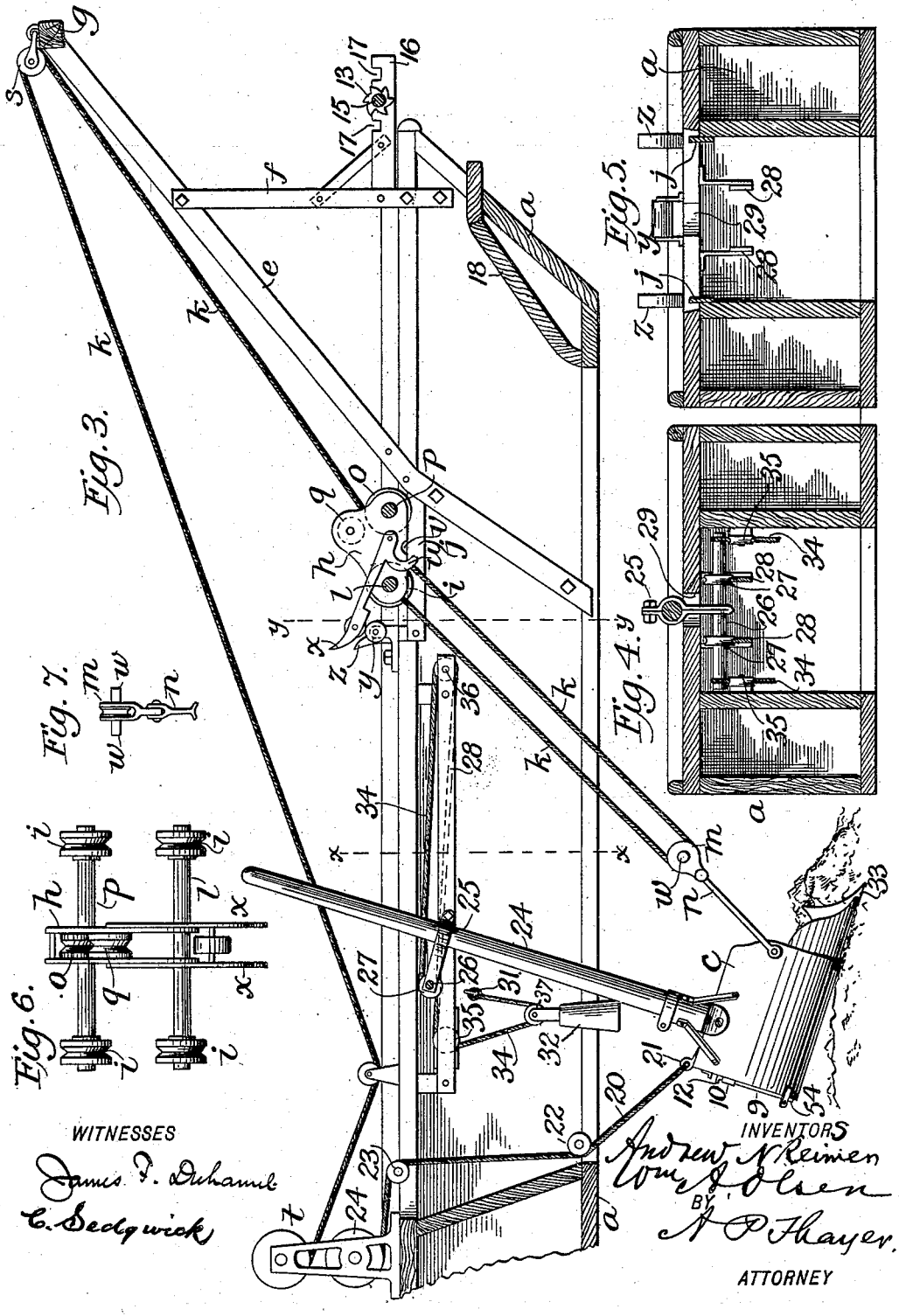

Fig. 3.

Fig. 5.

Fig. 4.

Fig. 7.

Fig. 6.

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UNITED STATES PATENT OFFICE.

ANDREW N. REIMER AND WILLIAM A. OLSEN, OF NEW YORK, N. Y.

DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 650,157, dated May 22, 1900.

Application filed December 23, 1899. Serial No. 741,421. (No model.)

To all whom it may concern.

Be it known that we, ANDREW N. REIMER and WILLIAM A. OLSEN, citizens of the United States of America, and residents of New York city, county and State of New York, have invented certain new and useful Improvements in Dredging-Machines, of which the following is a specification.

Our invention comprises improvements in apparatus for operating the scoop of a dredging-machine, whereby it is designed to provide simpler and more efficient apparatus for the purpose, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of part of our improved dredging-machine. Fig. 2 is a plan view of the under side of the bottom of the bucket with a part broken out. Fig. 3 is a longitudinal sectional elevation of part of the scow with the scoop-operating apparatus mainly in side view. Fig. 4 is a transverse section on line $x\,x$ of Fig. 1. Fig. 5 is a transverse section on line $y\,y$, Fig. 1. Fig. 6 is a plan view of the scoop-carrying truck. Fig. 7 is a front elevation of the pulley by which the hoisting-rope is connected with the scoop.

We provide a scow a with an opening b through the deck and the bottom near the bow or otherwise adapt it so that the scoop c may pass up and down, within which opening is mounted a stationary boom comprising a pair of rails e, rising upwardly and forwardly from the deck and reaching to a point over and a little beyond the end of the scow, said rails being attached for support at their lower portions to the scow in any approved way and duly supported near their upper ends by posts f. At the upper ends they are connected together by a bar g for rigidity. A truck h, having grooved wheels i, is provided to run up and down these rails and along rails j, extending along the deck a short distance from rails e at their junction with the deck.

From the aft end of the truck the scoop-operating rope k is suspended, being attached to axle l, but may be attached in any approved way. Said rope after passing through a pulley m on the bail n of the scoop passes over a pulley o on axle p of the truck, under a guide-pulley q, thence over a pulley s at the upper ends of the rails, and thence to a drum t for operating it, said drum being understood to have power applied to it for working it either way at will for raising and lowering the scoop.

The truck h carries a pair of hooks u, pivoted to its sides, respectively, and its sides are notched at v in such relation to the hooks u and to the guide-pulley o, over which the scoop-operating rope k works, that when the scoop is drawn upward in the first part of the hoisting operation projecting studs w of the pulley-block m will lodge in said notches, and the truck will then begin to run up the rails e, being forced along by the hoisting-rope k. The hooks u have rearwardly-projecting and upwardly-curved weighted arms x, which when the truck is in the position represented in Fig. 3, where it rests while the scoop is getting its load, rest on the tripping studs or rollers y to hold the hooks open for permitting the studs w to enter notches v when the scoop comes up. When the truck begins to rise on rails e, the arms x escape from rollers y and the hooks drop under studs w and hold the scoop so that it cannot drop away from the truck while being raised and emptied, and the truck is returned again to the place of starting, when the scoop is again detached from the truck, this being effected by the arms x again running up on the stud-rollers y. The scoop then descends again, as represented in Fig. 3, the hoisting-rope k being paid off from drum t as required for the purpose. The tripping-rollers y are mounted on the deck in fixed positions, and bumping-stops z are also fixed on the deck to stop the truck in its resting-place, the said tripping-rollers and bumping-stops being in the proper relation to each other for tripping the hooks when the truck reaches its stopping-place.

For tripping the bottom 2 of the scoop to discharge the load and for automatically shutting and latching it, said bottom being hinged at 3 and having slide-bolts 4 and catches 5 for securing it when closed, the slide-bolts 4 are jointed to lever 6, pivoted to the said bottom at 7, and jointed at 8 to one extremity of a yoke 9, fixed in slideways 10 and having coiled springs 11 adjusted for thrusting the bolts into the catches. The yoke 9 has a downwardly-turned flange 12 at its other extremity which is to be caught by a tooth of a dog 13

when the scoop arrives at its uppermost position and swings forward a little, as indicated in Fig. 1, to release the latch-bolts and let the bottom fall open under the weight of the contents of the scoop. A stop-lug 14 is attached to the bottom 2 to limit the retraction of the yoke inwardly. The dog 13 is in this example represented in the form of a ratchet-wheel having a series of teeth; but any form of dog having a single tooth will serve, only, as shown, it can be shifted to bring another tooth into action when one has worn and become ineffective. The dog is rigidly attached to a shaft 15, mounted in notched arms 16, projecting from the bow, in which notches the shaft is so fitted that it cannot rotate. A series of notches 17 is provided to favor locating the dog in the most effective position. When the scoop returns after discharging, the bottom 2, being forced back over the dog, swings up and automatically closes; but another device is also provided for closing it in case it should fail of being so closed. It consists of a sloping forward wall 18 of the opening through the scow, along which the forward edge of the bottom of the scoop will drag when descending, and thus be closed.

To facilitate the sinking of the scoop readily, the scoop being closed when it strikes the water, one or more inwardly-opening valves 19 will be provided in the side just above the bottom to open by the impact of the water when the scoop strikes and allow the scoop to fill, after which and when the scoop takes its load the valve or valves will be automatically closed thereby.

A rope 20 is attached to the scoop at 21 to pull it back from the place of discharging. It passes under a guide-pulley 22, over another 23, and onto the drum 24, which is to be understood as having power applied to it to run it in either direction for drawing up or paying out the rope.

When the scoop is drawn back by rope 20, it is desirable to tilt it point downward to thrust the spoon-point 23 into the ground when the pull on the rope *k* begins. For this purpose the staff 24 of the scoop is coupled by a yoke 25 with a shaft 26, having a grooved roller 27 each side of the middle, where the yoke is connected and arranged on rails 28, suspended from the deck each side of a slot 29 in the deck, through which the staff projects upwardly when the scoop is down, as in Fig. 3. The ends of this shaft 26 are respectively attached to ropes 34, passing over pulleys 35 and 36, fixed in stationary positions, also under weighted pulleys 37, and attached to fixed studs 31, with the weights 32 suspended in the bights of the ropes between points 31 and pulleys 35, so that when the hoisting-rope is let off for the descent of the bucket and rope 20 is under stress for pulling the scoop back the weights will thus tilt the point of the scoop downward. When the scoop is loaded and being drawn upward, the backward stress on the ropes 34 by the staff 24 will overcome the power of the weights 32, forcing shaft 26 back and raising the weights preparatory to the next operation.

The weights 32 are located so far distant from the scoop each side that it works between them unobstructedly.

The staff 24 is fitted to slide freely in the yoke, and they swing up through the slot 29 in the deck, as represented in Fig. 1, when the scoop is elevated for discharging, and the staff controlled by the yoke keeps the scoop steady.

The rollers 27, taking effect on the under side of the deck when the scoop is up, limit the upward movement of the staff.

The scoop is provided with an earth-breaking cutter attachment 33, located in the spoon-point 23.

What we claim as our invention is—

1. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, truck, rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck and a pulley at the top of the inclined rails, drum for operating said rope, and means for automatically hooking up the scoop to the truck and unhooking it.

2. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, truck, rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck and a pulley at the top of the inclined rails, drum for operating said rope, means for automatically hooking up the scoop to the truck and unhooking it, controlling-yoke for the scoop-staff, and means for automatically opening the scoop-bottom.

3. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck and a pulley at the top of the inclined rails, drum for operating said rope, means for automatically hooking up the scoop to the truck and unhooking it, consisting of the gravitating hooks pivoted to the truck, tripping-arms of the hooks and the tripping-rollers.

4. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, truck-rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck and a pulley at the top of the inclined rails, drum for operating said rope, means for automatically hooking up the scoop

to the truck and unhooking it, and means for automatically opening and closing the scoop consisting of the releasing-slide on the cover, dog supported at the bow for catching and withdrawing said slide, and the spring for shooting the latch-bolts.

5. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, truck-rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck, and a pulley at the top of the inclined rails, drum for operating said rope, means for automatically hooking up the scoop to the truck and unhooking it, means for automatically opening and closing the scoop consisting of the bolt-releasing slide on the cover, dog supported at the bow for catching and withdrawing said slide, the spring for shooting the latch-bolts, and the sloping wall of the scoop-passage.

6. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck and a pulley at the top of the inclined rails, drum for operating said rope, means for automatically hooking up the scoop to the truck and unhooking it, and the rope and drum for retracting the scoop.

7. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck and a pulley at the top of the inclined rails, drum for operating said rope, means for automatically hooking up the scoop to the truck and unhooking it, the rope and drum for retracting the scoop, and the weighted ropes coupled with the scoop-staff to direct the scoop-point into the ground.

8. The combination of the scow adapted for the passage of the scoop up and down at the forward part, the inclined rails reaching over the bow, rails for lodgment of the truck at the lower extremities of the inclined rails, scoop, hoisting-rope suspending the scoop from the truck and traversing a guide-pulley on the truck and a pulley at the top of the inclined rails, drum for operating said rope, means for automatically hooking up the scoop to the truck and unhooking it, the rope and drum for retracting the scoop, and means for directing the point of the scoop into the ground, consisting of the traversing shaft-rails therefor, yoke coupling the scoop-staff to said shaft, the weighted ropes coupled to the shaft, and guide-pulleys for said ropes arranged to swing the staff forward when the scoop is retracted and to control the staff when the scoop is raised.

Signed by us at New York, N. Y., this 30th day of November, 1899.

ANDREW N. REIMER.
WILLIAM A. OLSEN.

Witnesses:
A. P. THAYER,
C. SEDGWICK.